Claims:

1. A hybrid electric vehicle comprising:

an internal combustion engine;

an alternator for starting said engine and for generating poly-phase alternating current, said alternator being mounted to said engine shaft;

a direction switch for swapping two of the three power lines of said alternator;

a motor for providing driving and braking torque to the wheels of the vehicle, said motor being a multi-speed poly-phase induction motor and having a speed switch for changing the pole-pair number of said motor, said motor being electrically connected to said alternator through said speed switch and said direction switch;

a clutch for connecting said engine shaft to said motor shaft and allowing said engine to drive the wheels directly;

a battery; and

a motor control module being connected to the electric power lines of said alternator and said motor, said control module inverting direct current from said battery into poly-phase alternating current with variable frequency, said control module converting alternating current from said alternator and said motor into direct current, said control module setting positions of said speed switch and said direction switch.

2. A hybrid electric vehicle according to claim 1, wherein there is a set of gears between said clutch and said motor shaft.

3. A hybrid electric vehicle according to claim 1, wherein said direction switch is eliminated.

4. A hybrid electric vehicle according to claim 2, wherein said direction switch is eliminated.

5. A hybrid electric vehicle according to claim 1, wherein said direction switch is to swap two of three lines of said motor.

6. A hybrid electric vehicle according to claim 2, wherein said direction switch is to swap two of three lines of said motor.